

**RESPONSES TO U.S. EPA & OEPA COMMENTS
ON THE DRAFT
INTEGRATED ENVIRONMENTAL MONITORING PLAN
(REVISION 1)**

**FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO**

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**U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE**

1

**RESPONSE TO U.S. EPA COMMENTS
ON THE DRAFT INTEGRATED ENVIRONMENTAL
MONITORING PLAN (REVISION 1)**

2233

Original Specific Comment

1. Commenting Organization: U.S. EPA Commentor: Saric
Section#: 3.7.1 Pg.#: 3-62 Line#: 15 through 17 Code:
Original Comment# 5 (Original Specific Comment #: 5)

Comment: The original specific comment requests that the revised "Integrated Environmental Monitoring Plan" (IEMP) either specify the monitoring wells whose field measurements will be compared to modeled predicted uranium concentrations or describe the rationale used to select monitoring wells whose field measurements will be considered in this comparison. The response states that it is premature to select designated monitoring points to assess performance of the transport model until the VAM3DF groundwater model has been calibrated for both flow and transport. This comment may have been misinterpreted. The original specific comment requests that the method of calibration, calibration data set, calibration criteria, and endpoint of calibration of the VAM3DF groundwater model be specified prior to calibration. Establishing these parameters prior to the actual calibration exercise is normal to avoid biasing the calibration results. A revised response that addresses this issue should be provided.

Response: The U.S. Department of Energy's (DOE's) response originally addressed the issue of assessing model performance after the model had passed calibration. Based on U.S. Environmental Protection Agency's (EPA's) latest comment, it appears that calibration is the issue. The following information is provided to answer EPA identified calibration questions.

The flow portion of the VAM3DF model will undergo a conventional manual calibration using steady state flow conditions and the following water level data sets:
1) water levels with only the South Plume Removal Action wells operating, and
2) water levels with the South Field (Phase 1) Extraction, South Plume/South Plume Optimization, and Re-Injection Demonstration Modules operating. The calibration criteria will be the same as defined in Table 4.3-1 of the SWIFT Great Miami Aquifer Model, Summary of Improvements Report. Table 4.3-1 is provided with this comment response document (Attachment 1).

The transport portion of the VAM3DF model will be calibrated using a Kalman filtering technique which is still under development. If successful, then this technique can be used as necessary to automatically adjust parameters within specified limits to provide a best fit between model results and observed data. The calibration criteria will be the same as defined in Table 4.4-1 of the SWIFT Great Miami Aquifer Model, Summary of Improvements Report. Table 4.4-1 is provided with this comment response document (Attachment 1).

Hopefully, this additional information addresses EPA identified calibration questions. If not, it is suggested that additional questions be discussed at a future technical meeting.

Action: No revision to the IEMP is required.

2. Commenting Organization: U.S. EPA Commentor:
Section#: 6.3 Pg.#: 6-11 and 6-12 Line#: NA Code:
Original Comment# 6 (Original Specific Comment #: 6)

Comment: The original specific comment requests that the IEMP provide an expanded discussion of project-specific air monitoring results in the annual and quarterly integrated environmental monitoring status reports that meet the following criteria: (1) information that indicates an impact at or beyond the FEMP fenceline at a location not covered by the IEMP monitoring network; (2) information that indicates that an applicable or relevant and appropriate requirement is exceeded at an on-site location (for example, the radon limit of 100 picoCuries per liter [pCi/L]); and (3) any relevant project-specific air monitoring data that may provide early warning feedback indicating an increase in project-specific emissions.

The response agrees with the first two criteria and states that "this information is currently being provided in the IEMP quarterly status reports." However, as indicated by U.S. EPA's original specific comment 5 on the third quarter integrated environmental monitoring status (IEMS) report, the U.S. Department of Energy (DOE) is not meeting its stated obligations for presenting project-specific monitoring data. As discussed in the original comment, the IEMS report for the third quarter presents only minimal information concerning a potential fenceline impact from the Sewage Treatment Plant Complex Decontamination and Dismantlement project. The discussion of project-specific results in future quarterly and annual reports should be consistent with reporting requirements outlined in the IEMP and with the responses to this comment.

Response: DOE's response disagrees with the third criterion and states that "the IEMP will not report on increases in project emission" if these emissions "remain within applicable regulatory limits and process control specifications." The response should be revised to state that DOE will evaluate project emissions for increasing trends and report in the quarterly monitoring reports any trends that may have a potential fenceline impact. DOE recognizes that because of its location on the site fenceline, fugitive emissions from the Sewage Treatment Plant Complex Above-Grade Decontamination and Dismantlement Project could cross the Fernald Environmental Management Project (FEMP) property boundary without being monitored by the Integrated Environmental Monitoring Plan (IEMP) fenceline monitoring network. This was the basis for including a project-specific monitor within the project design. Because this project-specific monitor provides data which could be useful in assessing off-property impacts, DOE agrees that the information associated with this project-specific monitoring activity should be included, in detail, within IEMP reports. As such, the Integrated Environmental Monitoring Status Report for Fourth Quarter 1998 contained an expanded discussion and presentation of results from the project-specific air monitor at the Sewage Treatment Plant Complex. In the future, the decision to include detailed information on project-specific air monitoring activities within IEMP quarterly status reports and annual integrated site environmental reports will be based on the following criteria:

- Information that indicates an impact at or beyond the FEMP fenceline at a location not covered by the IEMP monitoring network
- Information that indicates the exceedance of an applicable or relevant and appropriate requirement at an on-site location (for example, the radon limit of 100 picoCuries per liter [pCi/L])

3

- Information that is relevant to explaining significant changes in the data from the IEMP air monitoring network.

The above reporting criteria will serve to implement the reviewer's suggestion to evaluate project emissions for increasing trends and report in IEMP quarterly status reports any trends that may have a potential fence line impact.

Action: The above bullets will replace the second bullet (line 9) and the 10th bullet (line 29) on page 6-43.

3. Commenting Organization: U.S. EPA Commentor: Saric
 Section#: 6.5.2 Pg.#: 6-28 Line#: 29 Code:
 Original Comment# 13 (Original Specific Comment #: 13)
 Comment: The original specific comment requests that the IEMP be revised to specify frequency of quality control (QC) checks for continuous radon monitors. DOE's response specifies the QC check frequency but states that this information is included in the sitewide CERCLA quality assurance project plan and that revision of the IEMP is not necessary. The IEMP should be revised to include this information because the current discussion of QC measures for radon monitoring is minimal compared to the discussion for the other two components of the air monitoring program (radiological air particulate monitoring and direct radiation monitoring).
 Response: DOE will revise the IEMP to include text which specifies quality control check frequency for the continuous radon monitors.
 Action: The following text will be added to line 5 on page 6-30:

"At a minimum, the continuous environmental radon monitors will be source checked monthly."

4. Commenting Organization: U.S. EPA Commentor: Saric
 Section#: 6.6.1.1 Pg.#: 6-37 Line#: 16 through 19 Code:
 Original Comment# 15 (Original Specific Comment #: 15)
 Comment: The original specific comment identifies four perimeter air monitoring locations (AMS-4, AMS-24, AMS-25, and AMS-28) at which thorium isotopes rather than uranium isotopes contributed most of the measured dose during the first two quarters of 1998. The original comment requests that DOE: (1) evaluate this trend for the remainder of 1998 and, if the trend continues, (2) address in the fourth quarter report the issue of whether modification to the IEMP air monitoring program is necessary.

The response incorrectly states that uranium isotopes accounted for 99 percent of the measured dose at the four locations during the third quarter of 1998. This statement is true for AMS-4 and AMS-28, but at AMS-24 and AMS-25, uranium isotopes contributed approximately 73 and 66 percent, respectively, of the measured dose during the third quarter. Further, cumulative 1998 dose contribution results presented in Table 3-3 of the third quarter monitoring report show that at both AMS-24 and AMS-25, the trend of high thorium dose contributions is continuing. At AMS-24, uranium accounted for only 29 percent of the cumulative dose, whereas thorium accounted for 62 percent; at AMS-25, uranium accounted for only 18 percent of the cumulative third quarter dose, whereas thorium accounted for 75 percent. At both locations, the uranium dose contributions to the cumulative third quarter dose remained well below historical levels of 62 to 94 percent cited in the response.

The response also states that DOE will continue to evaluate dose contributions from target radionuclides but does not indicate how the results of this evaluation will be documented. As requested in the original specific comment, DOE should specifically address this issue in the fourth quarter report for 1998. If uranium dose contributions at AMS-24, AMS-25, or other locations remain well below historical levels, the fourth quarter report should also specifically address whether modifications to the IEMP air monitoring program and analytical schedule are necessary at these locations.

Response: DOE will include the results of the evaluation of dose contributions from the target radionuclides in IEMP annual integrated site environmental reports. The evaluation will include an annual summary graph of the major dose contributors (i.e., target radionuclides which contribute at least 10 percent of the annual dose) at each fenceline monitor and a discussion of the results.

In the Integrated Environmental Monitoring Status Report for Fourth Quarter 1998, DOE expanded the discussion and presentation of data on the dose contributions from target radionuclides. The additional information, which includes a table with fourth quarter contributions to dose, improves the presentation, interpretation, and comparison of year-to-date and quarterly dose information. DOE believes the additional information will prevent some of the miscommunications noted in the above comment.

Thorium contributed the majority of the annual dose at AMS-24 and AMS-25. While these results are inconsistent with historical fenceline data in which uranium is the major contributor to dose, the results are less problematic when overall fenceline monitoring results, the location of AMS-24 and AMS-25, and the circumstances with the AMS-25 analytical data are considered.

At AMS-24 thorium contributed 61 percent of the 0.052 millirem (mrem) annual dose. This dose is well below the National Emissions Standards for Hazardous Air Pollutant (NESHAP) standard of 10 mrem per year and is approximately 21 percent of the highest annual fenceline dose (0.25 mrem) that was measured at AMS-3. Therefore, even though thorium was the major dose contributor at AMS-24 in 1998, the annual dose at AMS-24 is not of primary importance with respect to maintaining compliance with the NESHAP standard. In addition, AMS-24 is located in a predominately upwind direction from remediation activities and distant from any potential sources of thorium emissions. Therefore, it is unlikely that the thorium contribution to dose measured at AMS-24 reflects a change in the composition of radiological air particulate emissions from the site.

At AMS-25 thorium contributed 75 percent of the 0.11 mrem annual dose. As noted in the Integrated Environmental Monitoring Status Report for Second Quarter 1998, evaluation of the analytical data associated with the second quarter AMS-25 composite sample indicated that the off-site laboratory experienced difficulties during the thorium analysis which may have contributed to unusually high thorium results. Specifically, the laboratory encountered reoccurring interferences during the thorium analysis resulting in low tracer recoveries. In adjusting the data for the low tracer recoveries, the thorium results may have been biased high, especially the thorium-230 results. While the thorium-230 data were not rejected through the validation process, they were qualified as "tentatively identified" indicating limited confidence in the results. The unusually high second quarter thorium results when combined with third and fourth quarter results which were similar to background monitoring data are the reason thorium was the major contributor to annual dose at AMS-25. As with AMS-24, the

5

location of AMS-25 (in an upwind direction and distant from potential source areas) suggests that it is unlikely that the thorium contribution to dose reflects a change in the composition of the radiological air particulate emissions from the site.

Action:

No revision to the IEMP is required. However, DOE will include the results of the evaluation of dose contributions from the target radionuclides in IEMP annual integrated site environmental reports.

2233

**RESPONSE TO OHIO EPA COMMENTS
ON THE DRAFT INTEGRATED ENVIRONMENTAL
MONITORING PLAN (REVISION 1)**

5. Commenting Organization: Ohio EPA Commentor: OFFO
Section#: 1.2 Pg.#: 1.2-1.3 Line#: 16-38, 1-4 Code: C
Original Comment# 4
Comment: The responses to this comment state that "DOE agrees that addressing stakeholder concerns...is a primary objective of the IEMP" then continues to explain that the objective is "embodied within the overall design" and is "intrinsic to the...surveillance monitoring function as defined..." and as such believes that no revision to the IEMP is necessary. We agree that addressing stakeholder concerns should be one of the important program objectives (as stated in the original comment) and consequently do not understand why DOE does not mention this objective specifically under Section 1.2, Program Objectives and Scope. If it is a "primary objective of the IEMP" then stating it under the Program Objectives and Scope certainly seems appropriate even if it is "embodied within the overall design" and is "intrinsic to the...surveillance monitoring function."
Response: DOE acknowledges the comment.
Action: Line 21, on page 1-2, will be revised as follows:

 "...monitoring program) and continues to address stakeholder concerns"
6. Commenting Organization: Ohio EPA Commentor: OFFO
Section#: 3.6.5 Pg.#: 3-74 Line#: Code:
Original Comment# 18
Comment: The Ohio EPA is concerned with the DOE's response to this question. This response gives the impression that it may take many months before data is entered into the site database. Ground water data is very time sensitive, and needs to be evaluated in a timely manner. How often does it take three or more months to get the data entered? What is done with the data while it is waiting for validation or data entry? Ohio EPA wants to minimize the chances that time critical decisions are delayed while data is held up for validation or data entry, especially if the data is deemed usable in its "draft" form.
Response: DOE's original response specifically addressed the Ohio Environmental Protection Agency (OEPA) comment: "How long will it take to enter the data into the controlled database once the validated data are received from the lab?". The original response did not discuss evaluation of the data. DOE clearly understands the importance of timely data review and evaluation and how this process is crucial to making informed, time-critical decisions affecting monitoring and remediation activities. As such, environmental monitoring data are evaluated prior to entry into the site database. In addition, important project issues brought to light by reviewing this preliminary data are routinely communicated to the OEPA and EPA as soon as possible via project specific phone calls, faxes, meetings, etc.
Action: No revision to the IEMP is required.
7. Commenting Organization: Ohio EPA Commentor: OFFO
Section#: 4.2 Pg.#: 4.2-4.6 Line#: Code: C
Original Comment# 26
Comment: The comment refers to the emphasis placed on monitoring only as required by regulatory drivers, and that the list of regulatory drivers is not complete. The focus on

monitoring, only as required by regulatory drivers as listed, means that the list should be as complete as possible. OAC 3745-1-04 was given only as an example, and OEPA does not agree with the DOE response that "compliance with this code and monitoring requirements are met through the NPDES." For example, the NPDES permit states, in Part III, Section 2 (General Effluent Limitations), that "The effluent shall, at all times, be free of substances: A. In amounts that will settle to form putrescent, or otherwise objectionable, sludge deposits; or that will adversely affect aquatic life or water fowl; B. Of an oily, greasy, or surface-active nature, and of other floating debris, in amounts that will form noticeable accumulations of scum, foam or sheen; C...", etc. During the spill of diesel fuel in Paddys Run this past Spring, an oily discharge in violation of the rule occurred but compliance or monitoring under the NPDES did not take place. This discharge did not occur through the an NPDES discharge, it was downstream of any monitoring points under the NPDES permit. This is one example of a recent actual event. The concern is that there are many unforeseen circumstances that can occur that would not be caught under the short list of regulatory drivers in 4.2.2 and Table 4-1. It would therefore appear that the list needs to be more complete or the umbrella of drivers for monitoring needs to be expanded beyond only regulatory drives.

Response:

DOE is not certain as to the reviewer's expectations concerning surface water and treated effluent monitoring with respect to the regulatory drivers table, Table 4-1. As identified in Section 4.0 of the IEMP, Revision 1, at least 60 constituents are monitored at various frequencies along with four field parameters at 15 monitoring locations. This monitoring approach along with the regulatory drivers table (Table 4-1) have changed minimally from the approved IEMP, Revision 0, and as stated in the Responses to U.S. EPA and OEPA Comments on the Draft Integrated Environmental Monitoring Plan (Revision 1), Comment Response #43 (OEPA Original Comment #26) that although not all codes are specifically identified in Table 4-1, compliance and monitoring requirements are met through those regulatory and TBC-based requirements listed in regulatory driver tables (such as Table 4-1). It is considered that surface water and treated effluent monitoring is sufficient to meet compliance and monitoring requirements. If there are specific constituents or monitoring that needs to be conducted, then please identify them.

As for the spill incident referenced in this comment, it was a result of an opened drain valve on a piece of equipment conducting work in the channel of Paddys Run. The diesel spill was not through a regulated outfall. The general limitations contained in the National Pollutant Discharge Elimination System (NPDES) permit are related to effluent from regulated discharge points which are imposed to ensure that nuisance conditions do not develop in receiving waters. The effluent discharges through the regulated outfalls did not cause the nuisance condition referenced. No amount of visual monitoring of the outfalls as could reasonably be envisioned by the permit condition would have discovered this spill incident.

DOE takes seriously the NPDES Permit and all of it's provisions. Reasonable visual observation of effluent points and receiving waters to ensure nuisance conditions do not develop are being conducted in the field by documenting visual observations prior to those sampling events required as part of the IEMP. However, it is redundant to separately list these requirements as a monitoring ARAR in addition to the NPDES Permit. Further, the general limitations clause is only applicable to regulated NPDES outfalls.

Action:

No revision to the IEMP is required.

8. Commenting Organization: Ohio EPA Commentor: OFFO
Section#: 4.4.2.3 Pg.#: 4-18 Line#: 6 **2233** Code: C
Original Comment# 31

Comment: If a periodic review of the flows from the Hamilton Dam gauge will be conducted to determine the conservativeness of the 7Q10 value, then why not state this in the IEMP?

Response: DOE acknowledges the comment.

Action: The following text will be added to line 6 on page 4-18:

"In addition, flow conditions at the Hamilton Dam gauge will be periodically reviewed."

ATTACHMENT 1

TABLE 4.3-1

STEADY-STATE FLOW CALIBRATION MEASURES

Calibration Parameter	Criteria
Mean Residual Head	$< \pm 0.5$ feet
Mean of the Absolute Residuals of Head	$< \pm 2$ feet
Standard Deviation of Differences of Head	$< \pm 3$ feet
Regression Coefficient Between Measured and Computed Values of Head	0.95
Maximum Residual	Within the kriged confidence interval for the defined block
Water Balance	Within five percent

TABLE 4.4-1

SOLUTE TRANSPORT CALIBRATION ANALYSIS GOALS FOR BLOCKS WITH WELL CONTROL

Calibration Parameter	Criteria
Mean Residual Concentration	$< \pm 5.0$ $\mu\text{g/L}$
Mean of the Absolute Residuals of Concentration	$< \pm 10.0$ $\mu\text{g/L}$
Standard Deviation of Differences of Concentration	$< \pm 10.0$ $\mu\text{g/L}$
Regression Coefficient Between Measured and Computed Values of Concentrations	0.90
Maximum Residual	Within the kriged confidence interval for the defined block
Total Mass	Within five percent of mass determined through operations